The extended 'chilling' effect of Facebook: The cold reality of ubiquitous social networking.

Keywords: Surveillance, Facebook, Impression Management, Self-awareness, Privacy.

Abstract

Prior research has established the phenomenon of the 'Chilling Effect' where people constrain the self they present online due to peer-to-peer surveillance on Social Network Sites (SNS). However currently uninvestigated is the possibility that the threat of such surveillance on these sites might constrain the self presented *offline* in 'reality', known here as 'the *extended* chilling effect'. The purpose of this study is to examine the existence of this '*extended* chilling effect'. Drawing on theories of self-awareness and self-presentation, the impact of surveillance in SNS is theorized to lead to an awareness of online audiences in offline domains, stimulating a self-comparison process that results in impression management. A mixed methods study of semi-structured interviews (n = 28) and a 2 x 2 between-subjects experiment (n = 80), provides support for offline impression management in order to avoid an undesired image being projected to online audiences. The novel finding that the chilling effect has *extended* highlights the potential dangers of online peer-to-peer surveillance for autonomy and freedom of expression in our offline lives.

1. Introduction

Social media, and in particular social network sites (SNS) such as Facebook, are so ubiquitous (Vodanovich, Sundaram and Myers, 2010) that they have radically altered the nature and scope of social interaction for their users. SNS are hailed as technologies for self-presentation (Chen and Sharma, 2015; Fogues et al, 2014; Rui and Stefanone, 2013; de Vries, 2014), affording users a plethora of different functions to maintain online personas (Chen and Marcus, 2012; Tosun, 2012). However these sites also present challenges. Information is disclosed *publicly* (Joinson, 2008; Taddei and Contena, 2013), at least within the bounded network of connected 'friends', with low levels of *anonymity* (Zhao, Grasmuck and Martin, 2008), to *multiple audiences simultaneously* (e.g., parents, colleagues, family) (Binder, Howes and Sutcliffe, 2009).

Together these three phenomena of increasingly public behavior and low anonymity in front of multiple audiences via SNS have made users become cautious about how they present themselves. This has led to the online 'Chilling Effect', whereby users carefully manage their online personas, constrained by the expectations of their audiences (see Marwick and Boyd, 2011). Indeed, researchers using Facebook's own data have found that the vast majority of users engage in self-censorship of their posts (Das and Kramer, 2013). Furthermore other research has evidenced wide usage of removal strategies (e.g., deleting or de-tagging) (Lampinen, Tamminen and Oulasvirta, 2009; Lang and Barton, 2015). These strategies that underpin the chilling effect are forms of impression management, specifically, those aimed at *avoiding an undesired image* rather than approaching one which is desired (Schutz, 1998). This paper refers to the former as *Negatively Directed Impression Management* (NDIM[a]).

The impact of surveillance by audience(s) on constraining behavior (i.e., the Chilling Effect) has been well researched in the offline domain, in such contexts as prisons and the workplace (Foucault, 1977 Pierce, Snow and McAfee, 2013). As discussed above, the same effect has been seen to impact the maintenance of online personas. The purpose of this research is to examine, based on the pervasive and

[a] NDIM: Negatively Directed Impression Management

ubiquitous availability of digital cameras and uploading of photographs, if the Chilling Effect of online audiences has extended *offline*. In other words, do users constrain their behavior offline (i.e., perform NDIM), in 'reality', due to the fear of what may be made viewable to their online audiences. This novel phenomenon is known here as the *Extended Chilling Effect* of SNS, as in essence the Chilling Effect witnessed with selves presented on SNS may indeed have extended offline.

Through the lens of self-awareness (Duval and Wicklund, 1972) and self-presentation theory (Goffman, 1959; Leary, 1995), a behavioral process is theorized. This is that saliency of SNS whilst offline (i.e., a user is not directly engaged with the technologies interface) stimulates awareness of online audiences, starting a self-comparison process with these audiences' standards and if discrepant, NDIM will be enacted. Through the examination of this process the present paper will be able to understand and test the existence of the *extended* Chilling Effect. This research employs mixed methods. First a qualitative phase of interviews is used to provide rich real life examples of this effect, before the behavioral process theorized is tested in the second phase via experimental design. Together, these methods provide increased overall validity, particularly important in the examination of a phenomenon that has yet to be investigated (see Creswell and Clark, 2007; Johnson and Turner, 2003)

1.1 Surveillance and Behavior

The impact of an audience on people's behavior and psychological state is usually studied in terms of anonymity, identifiability and surveillance. In the late 19th Century, Le Bon (1897) claimed that the anonymity of the crowd led to submersion and loss of individuality and self – a proposal taken up more recently by proponents of deindividuation (e.g., Jiang, Heng and Choi, 2013; Prentice-Dunn and Rogers, 1977). While the deindividuation explanation for the impact of anonymity on behavior has been strongly questioned (see Reicher, Spears and Postmes, 1995), the impact of identifiability and surveillance on behavior has been consistently reported. In the main, this work has focused on the impact of surveillance in increasing socially desirable behavior (Becker, 1968) and decreasing socially

undesirable behavior (Pierce et al., 2013). For instance, Pierce et al. (2013) studied the theft and sales data of 392 restaurants and reported not only a reduction in employee theft but also an increase in productivity under surveillance. In addition Enzle and Harvey (1977) found that third-party surveillance increased the generosity of charitable donors. Taking a cue from Bentham's Panopticon, Foucault (1977) argued that pervasive surveillance – regardless of whether one is the actual subject of monitoring at any particular time or not – is a method of social control. This results in the subject of the surveillance internalizing the requirements of the powerful and engages in control of their behavior (Ibid). This is the 'chilling' effect of surveillance.

The term 'chilling' effect was first coined in connection to the American first amendment to describe the action of holding back free speech in the presence of surveillance (Dolich, 1993). Although the term 'chilling' effect has been employed to describe the outcome of surveillance on behavior, it is yet to be explicitly defined beyond the narrow lens of the American legal system. In keeping with the core characteristics of a 'chilling effect' as discussed in law, in the present paper we define a 'chilling' effect as the normalizing of behavior when under surveillance in line with the perceived standards, expectations and values of the perceived surveyor. This effect has been the subject of considerable legal discussion (e.g., Askin, 1972; Kaminski and Witnov, 2015) as well as the topic of popular debate (e.g., Lunden, 2013; Lyon, 2006; Richards, 2012). While there is considerable on-going debate about the necessary pre-cursors necessary for a 'chilling effect' to occur (e.g., the requirement or not of potential sanction; Richards, 2012), in the present paper we assume that people could respond in a 'chilling' manner for a number of reasons, including fear of external sanctions and social disapproval, regardless of whether or not that threat of sanction is real or not.

Within surveillance studies, more recent work has also come to include discussion of peer-to-peer (or lateral) surveillance (e.g., Andrejevic, 2010). In particular, SNS have been characterized as the location for participatory surveillance (Albrechtsland, 2008), with this used for social surveillance of romantic partners (Helsper and Whitty, 2010; Tokunaga, 2011) and reflecting the 'capillaries of power' embedded in everyday life (Marwick, 2012). Indeed, studies of the main uses of sites such as Facebook

have identified social surveillance as a primary motivator for use (Joinson, 2008; Lampe, Ellison and Steinfield, 2007). This social surveillance through SNS has been found to have a chilling effect on the presentation of online personas.

1.2 Chilling effect of SNS

On SNS, users present a digitized persona and endeavor to craft impressions given off to their audience (Chen and Sharma, 2015; Fogues et al, 2014). Management of a user's online image is particularly pressing when they are high in public self-consciousness (Lee-Won et al., 2014) and neuroticism (Michikyan, Subrahmanyam, & Dennis, 2014). Through SNS users are faced with multiple audiences simultaneously, resulting in what is known as 'context collapse' (Marwick and Boyd, 2011). Multiple audiences are 'collapsed' into a single group, with the usual context cues for audience segregation removed or unavailable (cf. Goffman, 1959). Although self-presentation in the presence of multiple audiences has been associated with some positive effects (see Leonardi, 2014), most authors highlight the negative emotional and relational effects, as people find it difficult to meet the standards of different audiences simultaneously (Binder et al., 2009; Choi et al, 2015; Marder, Joinson, and Shankar, 2012; Xie and Kang, 2015). In the face of this visibility and multiplicity in audience expectations, users have been found to manage impressions online (see Lampinen et al., 2009). This creates "a lowest-common denominator effect, as individuals only post things they believe their broadest group of acquaintances will find non-offensive" (Marwick and Boyd, 2011, p.11).

Indeed, Das and Kramer (2013) report that 71% of Facebook users had self-censored by editing at least one post over a period of 17 days when data from 3.9 million users was collected and analyzed, with users with more distinct friendship groups engaging in more self-censorship. Lang and Barton (2015) found that 84 percent of users have experience been tagged in an undesirable photograph and subsequently taken defensive action (e.g., untagging). This is evidence of the chilling effect of SNS occurring when people are engaged with the technology. Through the lens of impression management and

self-awareness theory the following section will theorize the behavioral process underpinning 'the chilling effect'.

1.3 Impression management and self-awareness

Impression Management is the endeavor to control the image (i.e., self-presentation) that is projected of oneself based on perceived expectations of their audience (Leary and Kowalski, 1990). The aim is to ensure that the image projected is deemed as desirable (or not undesirable) by the audience (Ibid). Self-presentational predicaments occur when there is a threat to an individual's public image, which is associated with the feeling of social anxiety (Leary, 1995). In this case, the threat occurs when the individual perceives that a projected image falls or will fall below the expectations of the audience. Impression management used in this circumstance is negatively directed, in that it aims to address the projection of an undesired image rather than being more positively directed at instilling a desired image (Leary and Kowalski, 1995). This Negatively Directed Impression Management (NDIM) is regarded here as synonymous with the chilling effect discussed, as individuals adapt their behavior to protect against self-presentational predicaments in the eyes of their surveyor(s).

Paramount to the practice of impression management is awareness of the audience (Leary, 1995). As Lampinen, et al. (2009) state, what underpins protective strategies on SNS is that the presence of the audience "is salient for the individual" (p.1). Akin with impression management theory, self-awareness theory proposes that awareness of an audience leads to a comparison process and, if discrepant, a behavioral response (i.e., impression management) in order to address the discrepancy (Carver and Scheier, 2001; Duval and Wicklund, 1972; Higgins, 1987; and, Leary, 1995). More specifically, this process is stimulated by public self-awareness, rather than private self-awareness. Froming, Walker and Lopyan, (1982) suggest that comparison and regulation depend on the focus of attention, stating, "attention to the private self may result in behavior that reflects personal attitudes; attention to the public self may cause behavior to become more consistent with societal expectations" (p.476).

Audiences have previously been used to stimulate public self-awareness, making an individual's social side more salient to activate regulatory behavior akin with the standards of the audience (Froming et al., 1982; Scheier and Carver, 1980). Conversely, in previous studies, mirrors have been employed to stimulate private self-awareness. This has been shown to make individuals' personal values more salient resulting in regulatory behavior associated with their own standards (Froming et al., 1982; Scheier and Carver, 1980). In the case of SNS the audience is highly salient because of the design of such sites. For instance, on signing into Facebook, users are now instantly presented with the newsfeed that displays updates from their network and are instantly notified when any of their audience interacts with their content.

In summary, the present research theorizes that the chilling effect is underpinned by the process of public self-awareness, comparison between the self presented and the perceived expectation of the audiences, and if discrepant, NDIM occurs (e.g., de-tagging, or self-censorship of posts). In other words, through NDIM an individual gravitates away from an undesired self-presentation towards one that is perceived to be desirable in the eyes of their audience, thus reducing the discrepancy (see Carver, Lawrence and Scheier, 1999).

1.4 Extended Chilling effect

In light of the pervasiveness of digital cameras and the inter-meshing of online and offline life, we propose that users of SNS may also enact NDIM in their *offline*, everyday activities if there is the possibility that content would be made available to audiences *online*. More specifically, if Facebook becomes salient offline, it is proposed that this will trigger the behavioral process discussed above, leading to a chilling effect on behavior in 'reality'. Figure 1 presents the behavioral process theorized to underpin the *extended* chilling effect. For example, when a user is asked to pose for a photo, Facebook may become salient if they believe the photo will be uploaded and linked. This may initiate comparison between their current self-presentation (predicted future online self-presentation) with the expectations of their audience and, if discrepant, they may adjust presentation accordingly (i.e., NDIM) to maintain

congruence. The objective of this research is to examine the existence of the extended chilling effect, and if found, to understand the behavioral process underpinning it.

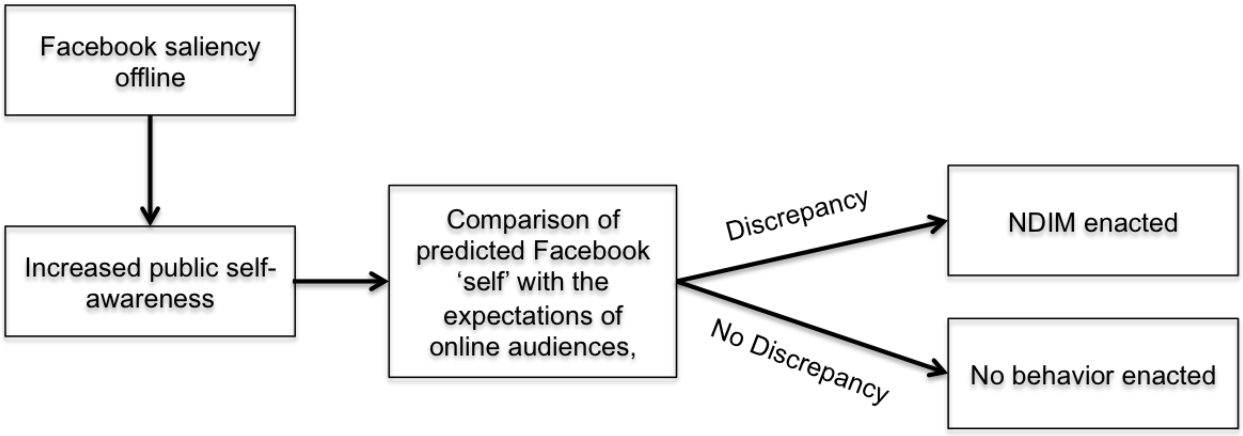

Figure 1: Hypothesized behavioral process underpinning the extended chilling effect of SNS.

2. Methods

This study adopted a sequential "independent level interaction", mixed-methods design, where the strands are then only mixed when making overall conclusions (Creswell and Clark; 2007; p.64-65). First, a qualitative phase of semi-structured interviews was conducted to examine the existence of the extended chilling effect through the real life accounts of users. Findings of this phase were also considered in conjunction with the behavioral process outlined. The subsequent quantitative phase, consisting of an experiment, was used to directly test the underlying process (see Figure 2 for an overview of the research design). It was the intention that the distinct qualitative and quantitative phases increase the overall ecological and internal validity of the study, respectively (see Creswell and Clark, 2007). Together the two phases are envisioned to be synergetic as they help mitigate the pitfalls of one another and provide stronger overall conclusions (Johnson and Turner, 2003).

3. Qualitative phase

3.1 Qualitative data collection

Twenty-eight semi-structured interviews were carried out. A purposeful sample of young Facebook users aged between 19-22 years of age, including sixteen females, was recruited via an emailing list at a UK University; participant details are given in Appendix 1. Participants were rewarded with a £7 honorarium. This sample choice mirrors other psychological investigations into Facebook (Fogel and Nehmad, 2009; Lee, 2014; McLaughlin and Vitak 2012). Participants were told in advance that they would be questioned on their Facebook use. The interview guide comprised 29 questions, in addition to demographic information. These questions covered a range of topics related to participants' use of social media, and specifically their use of Facebook. In the present study, a sub-set of these questions - nine probe questions and follow-ups – were analyzed. These nine questions formed a set of questions that were focused on whether participants ever thought about their online audiences when they were in offline scenarios (i.e., when not directly engaged with the Facebook interface, such as a party) and if they changed their behavior because of this. As suggest by Barter and Renold, (1999) a vignette was created – based on a real-life story recounted in earlier research to the research team - was provided to help stimulate participants' own recall and thinking. To minimize channeling responses, vignette implementation principles were considered (Barter and Renold, 1999). Specific questions and vignettes are provided in Appendix 2.

Thematic analysis served as the analytical approach of the study, specifically a 'top-down' method within a realist theoretical framework was employed to interpret the participants' reality (Braun and Clarke, 2006). In other words, interpretation was examined at the surface level of the data. This analytical approach is widely adopted within qualitative studies in the field of information systems (Aizpurua, Arrue and Vigo, 2015; Attard and Coulson, 2012), and herein involved a six-step method of familiarization, generation of initial codes, searching for themes, theme revision, defining themes, and finally the production of the report (Braun and Clarke, 2006). Nvivo 10 was used to conduct the thematic analysis. Akin with prior work in the field, generated codes and specified themes were verified by a

second researcher to reduce subjective bias and maintain analytical consistency (Bryce and Fraser, 2014). Only three inconsistencies were present, which were discussed between the two initial coders, then reconciled and verified by a third researcher. The data is presented using pseudonyms to protect participants' anonymity.

3.2 Analysis of qualitative data

Two key themes emerged from the analysis process: *Awareness of online broadcast* and *NDIM enacted offline*. The latter internalized three sub-themes; *Changing behavior for photos*, *Avoiding photos* and *Pleading*. Data for these will now be presented and discussed.

Awareness of online broadcast: All participants acknowledged awareness that behavior enacted offline might be communicated online. For most, the data provided was linked to the broadcast of photos, exemplified by the following quote:

> *"You are aware that photos will be put on Facebook, to be honest unless one of your friends is not a particular Facebook user you just assume that the pictures are going to end up on Facebook" (Anja)*

> *"I am very aware most of the time that photos will go on Facebook. There's one of my friends I know who is too lazy to put up her photos but otherwise I'm a hundred percent sure they'll all go on Facebook when friends take the photos." (Flo)*

This theme provides support that Facebook is salient offline, even when people are not engaging directly with the interface. Such an awareness that offline behavior will be captured and communicated to online audiences is the critical factor underpinning the extended chilling effect, since previous literature asserts the prerequisite of impression management is awareness of an audience (Scheier and Carver,

1980; Leary, 1995). The data overall also illustrate the role of mobile capturing devices in stimulating public-self-awareness, mirroring the effect of cameras found in prior work (Froming et al., 1982).

NDIM enacted offline: This theme provided direct support for the existence of the extended chilling effect, as it involves accounts of impression management enacted offline to avoid an undesired image being projected to online audiences. The following quotes support the subtheme of *Changing behavior for photos*, which relates to people realizing at the time just before a photo is taken that if the photo was to appear online, it would portray an image that would be discrepant from the standards of their online audiences. Therefore in response they change their current behavior to maintain congruence.

> *"When a picture is being taken and you are having the occasional cigarette that you don't want your parents to see on Facebook, then you put your arm around your back and pretend it's not happened and burn the girls shirt who's stood behind" (Harry)*

> *"I'll go out maybe once every 10 days or something, and out of these three times a month I'll probably only drink once but on Facebook it just seems that every time I go out I drink as every picture from this one time I went out I had a drink in my hand. Because of this when photos are being taken I definitely put the cup away and not have it in my hand" (Georgie).*

> *"At parties every time a picture was taken I put the spliff behind my back so people on Facebook don't think I'm a constant druggie [...] If the photo was not going to end up on Facebook I wouldn't care as much, I would care but not as much because not everyone would see it because it's a lot more public you know with Facebook" (Emma)*

These quotes show that participants are concerned about showing they partake in social drugs because it differs from the expectations of certain online audiences, such as their parents. Emma makes

the important point that it is Facebook that exacerbates the need to impression manage, beyond that would occur from of having a photo taken in the circumstance that it would not be broadcast online. This illustrates the power of cameras operated by Facebook users in stimulating public self-awareness (as opposed to cameras which are not operated by Facebook users), as people realize that photos taken will be more public. In addition to NDIM enacted in relation to social drug usage participants discussed similar actions in a romantic context, as illustrated by the following quotes.

> *"I remember during freshers' week I had a boyfriend, and he was really jealous and he saw some pictures of like me on someone's shoulders or something with a different boy and just like went mental at me, so I had to like consciously think every time there was a camera out like: oh, am I standing too close to this boy?" (Shelly)*

> *[Referring to a game at a party which involved passing drinks between the mouths of the players using straws] "I remember having the drink in my mouth and being connected to the next person and I remember someone, I could see the red light going on the camera, about to flash, and I remember pulling the straw out of my mouth and smiling […] because I would have got slaughtered by the girlfriend if that went on Facebook" (Tim)*

These quotes support the extended chilling effect in relation to the online surveillance by romantic partners. This supports previous research that found jealousy from romantic partners is a pressing issue for a similar sample of Facebook users (McAndrew and Shah, 2013). The subtheme of avoiding photos will now be presented. This theme involves people avoiding having their photo taken altogether.

> *"I tend to avoid the cameras, in first year everyone had cameras everywhere and pictures were put up on Facebook all the time and they were usually quite embarrassing photos." (Sally)*

"I wouldn't take my camera out on a beach or something. […] Because I wouldn't want pictures of me, and my friends wouldn't want pictures of them, like, in bikinis on Facebook." (Carol)

These quotes illustrate that participants simply wish to avoid photos due to fear about how these would portray them online. This is similar to the impression management technique of avoiding talking because of fear that what you say will be viewed as undesirable (Leary, 1995). Carol expressed her choice is to avoid taking photos altogether suggesting her freedom to take photos has been constrained by online surveillance, akin with Foucault's (1977) notion of the Panopticon. The final subtheme that will be discussed is Pleading, this is where participants recalled asking others not to upload photos before they were taken (often under the common phrase of 'No Facebook'), or to delete photos that had already been taken (but not already uploaded) due to how these would be perceived by online audiences.

"I've been kissing someone and I've seen the flash go off, I'm like, 'oh my god', I'm like, please don't tag me in that picture" (Emma)

[Referring to a situation where he was at a party trying to do a black flip into a swimming pool and fell over] "I'd be like, 'delete that one, nobody needs to know that I fell at the end of it', kind of thing" (Tim)

"Yeah if someone takes a photo that's really bad or if I've said something really stupid like I had a blonde moment, people will always upload stuff and post stuff like 'you'll never guess what so-and-so just said', I will be, like, don't tell everyone, don't put that on Facebook, don't tag me" (Lisa)

These behaviors are akin with Schutz's (1998) notion of protective impression management where people avoid projecting a negative persona by taking measures to ensure against certain information being projected to audiences. Lisa's quote supports the notion that NDIM is not just enacted in relation to photos, but to speech as well (discussed in more detail later). Overall the qualitative phase provides evidence for the existence of the extended chilling effect and some support for its theorized underpinning behavioral process. Thus, the data suggest that awareness of online audiences, in most cases induced by pervasiveness of digital cameras, leads to a comparison of the potential Facebook self with the expectations of audiences and, if discrepant, NDIM occurs.

4. Quantitative phase

4.1 Hypothesis

The following quantitative phase tested the behavioral process underpinning the extended chilling effect.

> *H1: People will enact NDIM offline (DV) when presented with the opportunity to behave in a socially undesirable manner offline (IV1) and Facebook audiences are salient (IV2), but they will not enact NDIM when Facebook is not salient, or the behavior is not socially undesirable.*

H1 was tested through a 2x2 between-subjects design (see Figure 2). Participants were presented with one of two possible opportunities (discrepancy conditions), one of which could reflect negatively on them (a trip to an Adult Entertainment Night Club [AENC]), and one that might be expected to reflect neutrally (a trip to a theme park) (IV1). An AENC was chosen as this is a commonly perceived as a controversial activity. A survey of male students ($N = 34$) was conducted to pre-test various types of trips for their appeal. A pairwise *t*-test showed the two trips (IV1 conditions) were similarly appealing using a 10-point scale ($p > .05$); AENC ($M = 6.59$, $SD = 3.07$) and theme park ($M = 7.06$, $SD = 2.34$). These two groups were further divided into those who were presented with a Facebook prime and those who were

not presented with a Facebook prime (IV2) (further details of the experimental conditions are available below). The participants then evaluated their invitation and scored their likelihood of signing up for the trip, and indicated the amount of spending money (i.e., payment) they would want to go on the trip. The latter is interpreted here as an economic measure of compensation. These two scores together as a composite measure formed the main dependent variable for offline NDIM (detailed further below). There were a number of ethical concerns related to the concealed purpose of the study, the potential for stimuli material to be offensive and the potential to induce anxiety. The British Psychological Society guidelines on conducting research with human participants (BPS, 2009) were followed, and the study was approved by the Social Sciences Ethics Committee at the host university.

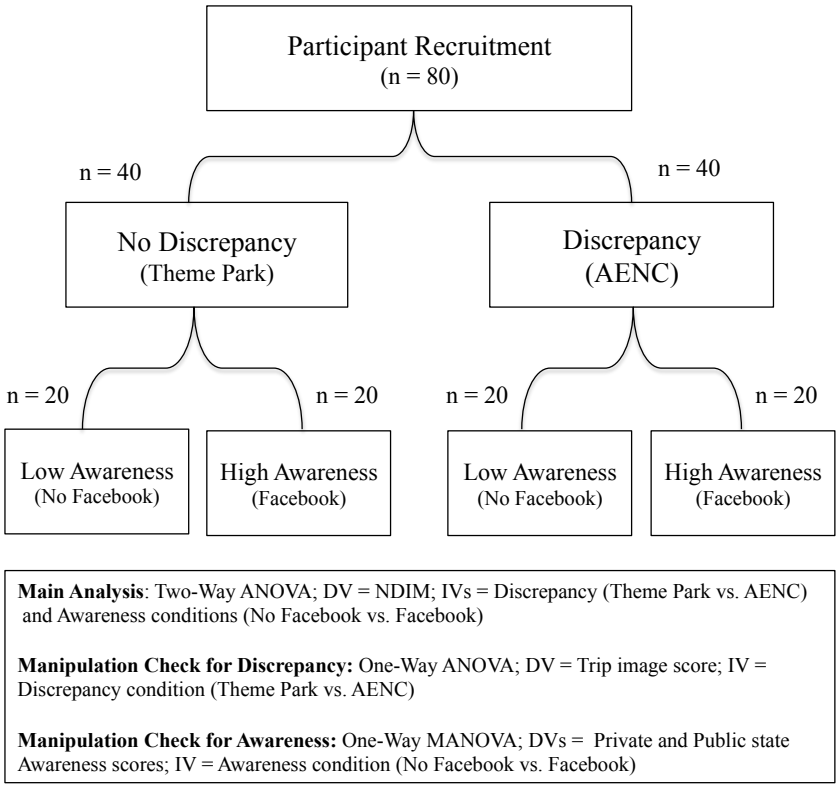

Figure 2: Overview of the experimental design and analysis adopted within the quantitative phase.

4.2 Participants

Participants were recruited using a purposeful sample of male Facebook users (73 undergraduates, 7 postgraduates) at the same UK university (N = 80) as in the qualitative phase. Recruitment occurred in a public area at the university. They were all young adults (M = 19.94 years, SD = 2.17). Participation was rewarded with a £5 honorarium. The nature of the trips used as experimental conditions required an all male sample, limitations of which are addressed later.

4.3 Procedure

The researcher posed as a market researcher for a company called 'University Tripz', offering the participant a cash reward for feedback on potential trips. The researcher wore a t-shirt with the logo for the company, and a corporate name badge. Consenting participants were taken to the lab and were told that the research was being conducted for 'University Tripz', a new company that had been set up in order to provide trips for students across the UK and to help foster better social and academic bonds between local universities. The lab was decorated in the company logos. It was explained that 'University Tripz' was not associated with the University, but that the University was allowing the research to be conducted on its premises. Data were anonymous and participants could withdraw at any time. They were told they might be given the opportunity to take part in a free trial trip that would be paid for with research funding.

Participants were seated in front of a lab computer and asked to complete a short online market research questionnaire which supported the cover story. Simultaneously, the experimenter sequentially allocated them to one of the four conditions. Participants were told that the company had organized a previous trip to an AENC or theme park (depending on condition) and the trip logistics were explained. At this point participants were shown photographs (Facebook was primed depending on the condition) from the previous trip for 30 seconds. The participants then completed measures of state private / public self-awareness, their likelihood of signing up for the free trip and the spending money they would require

to go on the trip. They then completed a series of demographic questions, and a trait private / public self-awareness scale. During this part of the experiment the researcher sat away from the participant to avoid influencing self-awareness.

Finally, participants were thanked for their help, handed their honorarium and asked the following question to ascertain whether the cover story had been successful: "Just out of interest, what particularly did you think 'University Tripz' was trying to find out from this research?" Data from participants who doubted the cover story (n = 2) were discarded from the analysis and further respondents were collected to maintain equal cell sizes. A full debrief followed the study. The following provides further explanation of the experimental conditions and specific measures employed.

The *Facebook* condition received photographs in a mocked up screen print from Facebook, and were told casually that if they were to go on the trip they would need to add the 'University Tripz' representative to Facebook so pictures might be tagged for promotional reasons. In the *No Facebook* condition, the same photographs were shown with a blank, white background.

4.4 Measures

2.2.4.1 State self-awareness measure. Participants completed a six-item self-awareness scale (three public, three private items (Govern and Marsch, 2001). Using a 7-point Likert scale (7 = strongly agree). The measure emphasized the situational nature of the items with the following written and verbal instruction, "Please respond to each statement based on how you feel RIGHT NOW, AT THIS INSTANT". The scale included the following six items: 1) "I am conscious of my inner feelings" [Private]; 2) "I am concerned about the way I present myself" [Public]; 3) "I am conscious about the way I look" [Public]; 4) "I am reflective about my life" [Private]; 5) "I am concerned about what other people think of me" [Public]; and 6) "I am aware of my innermost thoughts" [Private]. Scores for both awareness domains were calculated by summing the scores for the respective three-items.

2.2.4.2 Trip discrepancy. To check that the trip type manipulation was successful, participants were asked to indicate the image of themselves they thought would be projected to the five different

audience types (close friends, guardians, current/potential employers, current/potential relational partners) if they took part in five different trips (museum, AENC, brewery visit, windmill, theme park). Although only the results of AENC and theme park were important for the study, other trips were questioned to support the cover story. The exact question was as follows, repeated for each audience type creating a five-item measure: "Please indicate what image of yourself you think would be projected to [insert audience type] if you took part in the trips below?" A seven-point scale was provided including a neutral point (1 – 'Very bad image of yourself'; 7 – 'Very good image of yourself'). The score for trip discrepancy for each trip was calculated by summing the individual scores for each audience.

2.2.4.3 NDIM (offline). Participants' intentions to enact NDIM offline was measured using a composite created from two responses: one for payment required to go on the trip and one for their likelihood of going on the trip. For payment, participants were told, "If you were to take part in one of the forthcoming trips to the (AENC / theme park), expenses would be paid. However on top of this, the research project is also considering paying students a cash incentive up front for their participation". They were then asked "Please honestly indicate the amount in pounds you would require to take part in the trip, or if you would be happy to take part for free." Participants were given the option to circle 'free' or write an amount in the box provided. For likelihood, participants were asked how likely it would be that they would want to take part in the trial trip that was being offered to an AENC / theme park, using two items on a 7-point scale (7 = high). The first item was positively worded, "How likely would it be that you would want to participate in the next trip?" whereas the second was phrased negatively and reverse coded, "What is the probability that you will NOT want to sign up for the next trip?" Multiplying likelihood by payment created the composite NDIM variable that was then standardized. This acted to weigh the monetary measure since the amount requested by people with no intention of attending the trip would carry less weight compared to someone with a high likelihood of attending.

4.5 Data Analysis and Results

Manipulation checks. To test the impact of the Facebook manipulation on self-awareness, a one-way MANOVA was conducted with public and private state self-awareness as the DVs, and the photograph format (Facebook vs. No Facebook) as the IV. Descriptive statistics are given in Table 1. The multivariate test was significant ($F_{(2, 77)}$ = 4.106, p =.020; η^2 = .096) with the mean scores showing an increase (decrease) in public (private) self-awareness for the Facebook (No Facebook) conditions. For public self-awareness, the Facebook condition (M = 11.450, SD =3.890) was significantly higher than the No Facebook condition (M = 10.525, SD = 3.602) and for private self-awareness the Facebook condition (M = 11.050, SD = 3.890) was significantly lower than the No Facebook condition (M = 12.650, SD = 4.172).

Table 1: Self-Awareness Manipulation Check (One-way MANOVA)

	Self-Awareness Manipulation			
	Facebook		**No Facebook**	
	Mean	S.D	Mean	S.D
State Private Self-Awareness	*11.05*	*3.89*	*12.65*	*4.17*
State Public Self-Awareness	*11.45*	*3.89*	*10.52*	*3.60*

To confirm the trip discrepancy manipulation, (i.e., that the trip type was likely to lead to different impressions on the participants' audiences) a one-way between subjects ANOVA was conducted. This compared the effect of trip type (AENC vs. Theme Park; IV) on the image projected to others if they were to go on the trip (DV). Descriptive statistics are given in Table 2. There was a significant effect of trip type on the trip image ($F_{(1, 78)}$ = 173.752, p < .001, η^2 = .690) showing AENCs (M = 9.750, SD = 3.579) were significantly more discrepant than Theme Parks (vs. M = 19.600, SD = 3.087).

Table 2: Trip Discrepancy Manipulation Check (One-way ANOVA)

	Trip Discrepancy Manipulation			
	Theme Park		AENC	
	Mean	S.D	Mean	S.D
Image score	*19.6*	*3.09*	*9.75*	*3.58*

Offline NDIM. A two-way ANOVA was used to test the main effect of trip discrepancy (AENC vs. theme park) and awareness (Facebook vs. No Facebook) on the composite DV (Standardized). Descriptive statistics are given in Table 3. There was a significant interaction effect between the awareness and trip discrepancy manipulations ($F_{(1, 76)} = 4.65$, $p = .034$, $\eta^2 = .058$). However, no significant main effects were found. The nature of the interaction is shown in Figure 3. Tests of simple effects found that offline NDIM was higher for participants within the Facebook condition cf. the No Facebook condition ($M_z = 5.342$, $SD = 1.268$, vs. $M_z = -1.86$, $SD = .709$, respectively) when faced with a trip to a AENC ($F_{(1, 38)} = 4.910$, $p = .033$, $\eta^2 = .120$). However, there was no significant difference in NDIM across the awareness conditions associated with a trip to a theme park ($p > .05$).

Table 3: Main Analysis for NDIM (Two-way ANOVA)

	Theme Park (Low Discrepancy)		AENC (High Disc)	
	Mean	S.D	Mean	S.D
No Facebook (Low Pub Self-Awareness)	*-.07*	*1.13*	*-1.86*	*0.71*
Facebook (High Public Self-Awareness)	*-.27*	*0.58*	*5.34*	*1.26*

NB: Descriptive statistics are presented as standardized scores for NDIM

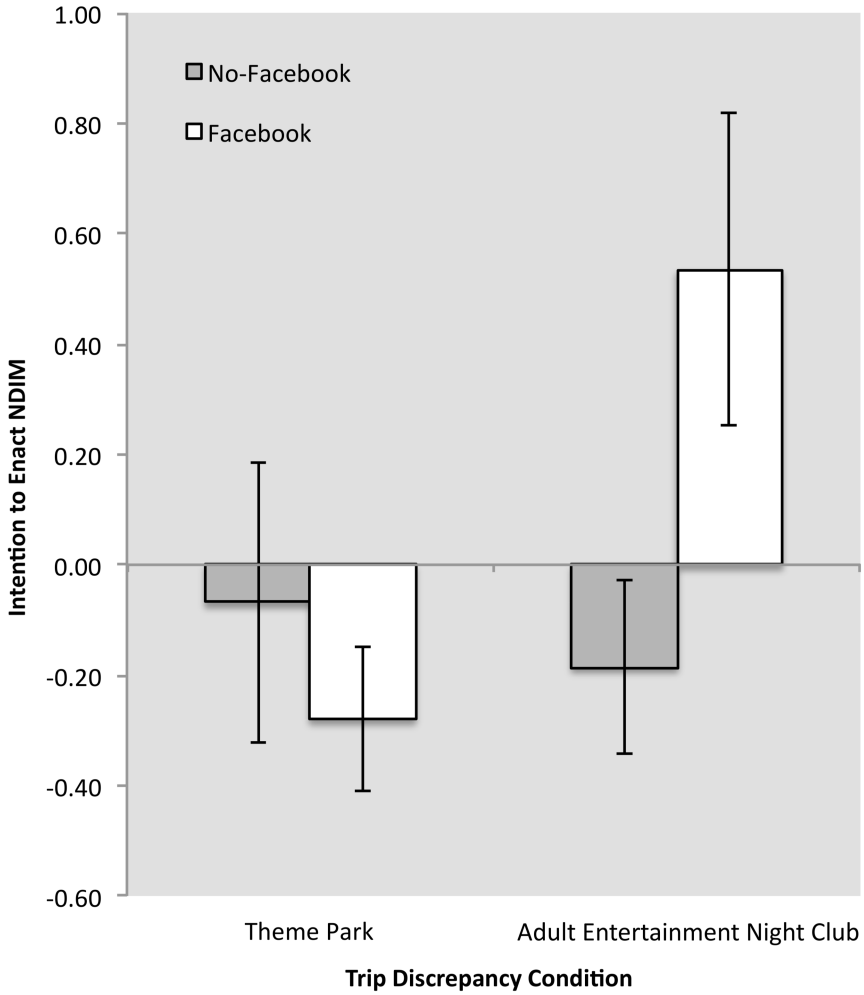

Figure 3: Standardized scores for intention to enact NDIM offline for Trip Discrepancy and Awareness conditions.

The findings provide evidence to support H1. When participants were primed with Facebook this led to a significantly higher intention to enact NDIM offline only for those who faced the possibility of a discrepant presentation (i.e., attending an AENC). Participants in the Facebook-primed condition required a significantly higher payment to go on the trip (controlling for likelihood) than those who had not been primed. No significant differences across awareness conditions were seen when participants faced the low discrepancy trip (i.e., the Theme Park).

Overall the results of the quantitative phase support the extended chilling effect of SNS, finding that saliency of Facebook offline (i.e., the awareness of online audiences) is associated with increased intention to enact NDIM in 'reality', in line with the expectation of online audiences.

5. General Discussion

The chilling effect of surveillance is widely known in the extant literature (Enzle and Harvey, 1977; Pierce et al., 2013) and recent work has found it to exist in relation to the self-presented on SNS (Das and Kramer, 2013; Marwick and Boyd, 2011). This research provides novel evidence that this chilling effect caused by presence of online audiences even extends *offline*.

Together both research phases support the existence of the extended chilling effect and the behavioral process theorized to underpin it. It is clear that awareness of online audiences can occur when people are not directly engaged with the Facebook interface, particularly due to the presence of digital recording devices such as cameras. This leads to a comparison between individuals' potential Facebook 'selves' with the expectations of audiences, and if discrepant this results in NDIM or intentions towards NDIM. This supports existing literature that associates awareness, comparison and behavior (Froming et al., 1982; Leary, 1995; Scheier and Carver, 1980) and further highlights that this process can straddle both online and offline domains. The findings contribute that membership of SNS is profoundly intertwined with the knowledge that information about our offline activities may be communicated online, and that the thought of displeasing 'imagined audiences' alters our 'real-life' behavior.

The findings of the present study taken alone are modest with regards to the extent users alter their 'real-life' behavior. The instances found in the qualitative phase were mostly momentary, occurring at the time a photo was being taken or at least when a camera was present (e.g., hiding their drinks). Little support was found for more extreme behavior adaptation, such as choosing not to drink at a party, although this may be due to limitations in the interview questions. However the quantitative phase maintained the existence of an arguably greater effect on 'real-life' behavior. The results implied that behavior was inhibited to a greater degree if actions were likely to be visible to online audiences than if

they were not perceived to reach such audiences. The existence of such a strong effect is supported by recent reports of the decline in women choosing to sunbathe topless in France. As stated in the Guardian newspaper, "young women in their 20s do it less because they are aware that ... you can end up topless on your own Facebook wall" (Ferrier, 2014, p.1). This quote is supported to an extent by the data herein, as Carol reports that she chooses not to take a camera to the beach to avoid photos of her and her friends wearing bikinis being posted online.

Just as prisoners in Foucault's (1977) conception of Bentham's Panopticon moderated their behavior due to the possibility that they were being watched, the possibility of compromising content being seen by online audiences moderates decisions offline. This paper therefore supports the association between surveillance and reduction in socially undesirable behavior (Enzle and Harvey, 1977; Pierce et al., 2013). However the chilling effect of surveillance should not only be seen in terms of state surveillance, but also through peer-to-peer or lateral surveillance in SNS, and is exacerbated by low anonymity, high visibility and multiple audiences associated with these sites.

Overall, the present findings suggest that SNS are not necessarily liberating (Albrechtslund, 2008), but rather they have the potential to be somewhat oppressive, as users normalize their behavior (or behavioral intention) both online and offline. This effect can be expected to worsen as more information is automatically linked to SNS, such as tracks which users listened to on Spotify, films they watch on Netflix, or details of their online purchases, and as home and work blur through increasing use of SNS in the workplace. Users may well take into account the scrutiny of online audiences when choosing which songs to listen to, movies to watch or items to buy.

The rise of wearable technologies that can capture, store and communicate our day-to-day lives online is expected to further exacerbate the extended chilling effect as surveillance will be more ubiquitous than before. Subsequently, it is no wonder that Google Glass has received much criticism from privacy advocates (see Rauschnabel, Brem and Ivens, 2015). The invisibility of Facebook as a panoptic structure able to produce a chilling effect arguably increases its power compared to Bentham's prison. This is because the "more soft and subtle" the panoptic surveillance the more it produces the

normalization of behavior, as opposed to surveillance that is "more stringent, and rigorous", which results in resistance (Lyon, 2006, p.4). Given this, and although well beyond the modest contribution of this research, it is fascinating to speculate the somewhat science-fictional notion that the omnipresence of personal recording devices, facial recognition and SNS may lead us with little resistance towards an Orwellian society based on peer-to-peer surveillance.

In contrast to the chilling effect of online surveillance, a 'warming' effect (to society) is conceivable. Facebook saliency may have the effect of increasing prosocial behavior such as charitable donations. Such a warming effect, would involve positively directed impression management to approach the expectation of online audiences. Some evidence for this was provided in qualitative phase where participants discussed that they wanted "to look good" (approach based terminology), although most participants discussed "not wanting to look bad" (avoidance based terminology) (see Crowe and Higgins, 1997). However, the lean towards NDIM in the findings may be explained by the focus of this study on chilled behavior influencing the interview questioning.

6. Conclusion

In conclusion, this research supports the notion that surveillance from online audiences not only 'chills' our online behavior, but in certain circumstances may also have a similar 'chilling' effect on our offline behavior. This research provides a first insight into what may be a profound effect of online peer-to-peer surveillance bringing to light the importance of further research into this phenomenon.

6.1 Limitations and future research

This paper provides evidence of the extended chilling effect mostly associated with non-verbal information communications (i.e., photos). One participant in the qualitative phase (Lisa) discussed how she would ask others not to report "stupid" things she said online, suggesting the extended chilling effect may be also linked to verbal behavior, and future research needs to address this possibility. Additionally a

deeper understanding is needed into which specific environmental cues stimulate public self-awareness offline related to online audiences (e.g., cameras, access via Smartphones, proximity to high intensity Facebook users). Furthermore, attention should be paid to the intriguing prospect that Facebook membership may affect trait levels of public self-awareness. Hence experiments should compare trait levels of self-awareness for high / low scorers on Ellison, Steinfield and Lampe's (2007) Facebook intensity scale.

We recognize the limitations of using a single-item measure for required payment (the amount requested by participants to attend either the AENC or theme park). However, it was considered that utilizing multiple items would have been unnatural in such a market research survey, undermining the cover story. Following the advice of Alexandrov (2010) who defends the validity of single-item measures when there is no ambiguity in how they are understood, effort was made during piloting to ensure that the written and verbal instruction left no ambiguity. Future research should aim to experimentally test the offline chilling effect through measuring actual behavior, rather than self-reported behavior.

A further consideration for the present work was the all male sample in the quantitative phase. This impacts on the generalizability of these findings to female Facebook users. Great consideration was given to the possibility of conducting this experiment with both male and female participants, but an event of similar discrepancy for each, or both sexes, was difficult to identify. However, previous research examining the mechanisms underpinning regulatory processes does not suggest a gender difference, which was further supported by accounts of the extended chilling effect by both genders in the qualitative phase. The final consideration is how far this paper's findings from a young, predominately native English speaking Facebook sample can generalize to users of different ages from different cultures. Future research should explore the extension of the chilling effect offline for different demographics.

Future research should examine the existence of the possible *warming effect* (or extended warming effect) of online surveillance. If a 'chilling effect' of social media is primarily about avoiding negative outcomes or audience judgment, then a 'warming effect' would be the additional motivation peer-to-peer surveillance can provide to help people to reach a desired state. That is, if chilling effects are

based on the 'should' self, then warming effects speak to the 'could' self (Crowe and Higgins, 1997) – the person that we would ideally like to be. Certainly, there is considerable evidence in the social psychology field that co-presence of others can affect performance (Bond and Titus, 1983), and that publically stating an intention or goal increases the likelihood of achieving that goal (Cialdini and Goldstein, 2004).

Furthermore, forthcoming studies should consider the finding by Carver, Lawrence and Scheier (1999), that avoidance-based behavior is more prevalent when the proximity of the current/predicted self is close to the undesired state, whereas approach-based behavior is more dominant when the undesired self is more distant (towards a desired self). In the context of online surveillance, when Facebook is made salient offline and a self-presentational predicament is not faced, people may still perform impression management to approach a desired image (i.e., attempt to make themselves look more attractive for cameras).

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Appendix 1.

Details of participants in the qualitative phase of research.

No.	Pseudonym	Age	Gender	Degree
1	Harry	19	M	Business Administration
2	Jess	20	F	Business Administration
3	Jez	20	M	Business Administration
4	Sally	21	F	Business Administration
5	Georgie	19	F	Business Administration
6	Ellie	19	F	Business Administration
7	Anja	20	F	Politics and International Relations
8	Emily	19	F	Business Administration
9	Tom	19	M	Politics and International Relations
10	Holly	21	F	Business Administration
11	Jack	21	M	Economics
12	Emma	21	F	Business Administration
13	James	22	M	Economics
14	Chris	21	M	Business Administration
15	Dave	19	M	Business Administration
16	Neil	20	M	Business Administration
17	Lisa	20	F	Politics and International Relations
18	David	20	M	Business Administration
19	Grace	20	F	Business Administration
20	Sash	20	F	Psychology
21	Dan	21	M	Politics and International Relations
22	Steph	19	F	Business Administration
23	Carol	20	F	Business Administration
24	Tim	19	M	Business Administration
25	Kara	21	F	Business Administration
26	John	19	M	Business Administration
27	Flo	20	F	Psychology
28	Becca	21	F	Business Administration

Appendix 2.

Core questions (Q1–Q9) and the vignette (V1) associated with the present study from within the overall interview guide.

No.	**Question**
Q1	When you are offline and people around you have cameras or camera phones are you aware that they may post pictures they take on Facebook?
Q2	When offline, in normal life e.g., a party, do you ever think your actions may be captured and linked to your on Facebook?
Q3	At, say a party, do you ever think about what your Facebook 'friends' will think about you if pictures from the party were to end up online? Are there particular Facebook 'friends' that are of concern?
Q4	Do you think because of Facebook and cameras/camera phones you are more or less aware of how you are behaving at parties?
Q5	Have you ever asked someone not to upload a photograph that you are in?
Q6	When at a party have you ever changed your actions due to the perception that what you were currently doing may be photographed and end up on your Facebook? [Participants were provided with the vignette prior to this question]
Q7	How do you feel before checking Facebook the morning after a night out?
Q8	Due to the existence of Facebook do you think you have to be more careful about your actions in day-to-day life?
Q9	Facebook has lots of benefits, but do you think there are trade-offs for these?
	Vignette
V1.	A final year undergraduate student told us in a previous study that they had been at a house party. This house party was held at about the time he was applying for graduate employment schemes and had applications in process. He said he was a social smoker, although his parents did not know, and he had heard that employers did not like smokers. He said that while at the house party he remembered he was smoking, and then he saw someone pull out their camera phone as if to take a picture, so he quickly threw the cigarette he was smoking onto the ground as he did not want a picture of him smoking appearing online.